

Amendments to the Claims

Claims 1-8 (Cancelled)

9. (amended three times) A process for the isolation of nucleic acids from a sample comprising the following steps:

- (a) applying at least one nucleic acid sample to a non-siliceous surface;
- (b) immobilizing the nucleic acids of the nucleic acid sample on the non-siliceous surface in the presence of:
 - (i) a compound selected from the group consisting of a salt of a metal and/or ammonium cation with a mineral acid, a salt of a mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal, ~~a hydroxy-functional compound of an aliphatic or a cyclic saturated or unsaturated hydrocarbon, a phenol or polyphenol,~~ a chaotropic agent, and combinations thereof, and
 - (ii) a hydroxy compound,

wherein the nucleic acids are reversibly immobilized on the non-siliceous surface;

- (c) releasing the immobilized nucleic acids from the non-siliceous surface with an elution agent, characterized in that the release takes place at a temperature T, whereby $10^{\circ}\text{C} \geq T \geq T_{S,EM}$, and $T_{S,EM}$ equals the freezing point of the elution agent.

10. (original) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $10^{\circ}\text{C} \geq T \geq 5^{\circ}\text{C}$.

11. (previously amended) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $10^{\circ}\text{C} \geq T \geq 0^{\circ}\text{C}$.

12. (previously amended) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $10^{\circ}\text{C} \geq T \geq -5^{\circ}\text{C}$.

13. (original) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $5^{\circ}\text{C} \geq T \geq T_{\text{S,EM}}$.

Claims 14-19 (Cancelled)

20. (previously amended) The process according to Claim 9, characterized in that after the release step at least one additional step takes place:

- performing at least one chemical reaction with the nucleic acids.

Claims 21-36 (Cancelled)

37. (previously amended) The process according to Claim 9, characterized in that the sample is introduced onto the top of the surface.

38. (previously amended) A process according to Claim 9, characterized in that the immobilized nucleic acids are subjected to a washing step which takes place with at least one washing buffer after the immobilization and before any release steps.

39. (previously amended) The process according to Claim 38, characterized in that the washing step consists of the following steps for each washing buffer:

- applying a predetermined quantity of washing buffer on the non-siliceous surface; and
- passing the washing buffer through the non-siliceous surface.

40. (**twice amended**) The process according to Claim 9, wherein said elution agent in step (c) of the process is characterized in that an aqueous salt or buffer solution is used to release the nucleic acids.

41. (**twice amended**) The process according to Claim 9, wherein said elution agent in step (c) of the process is characterized in that water is used to release the nucleic acids.

42. (previously amended) The process according to Claim 9, characterized in that the application and immobilization of the nucleic acids includes the following steps:
 mixing at least one nucleic acid-containing sample with an immobilization buffer;
 applying said at least one nucleic acid-containing sample with the immobilization buffer to the non-siliceous surface; and
 passing the liquid components through the non-siliceous surface in essentially the same direction they were added.
43. (previously amended) The process according to Claim 9, characterized in that at least one of the steps is carried out by an automatic device, in a fully automatic manner.
44. (original) The process according to Claim 43, characterized in that all steps of the process are performed by an automatic apparatus in a controlled sequence.
45. (original) The process according to Claim 43, characterized in that a majority of nucleic acid isolations or reactions take place simultaneously.
46. (twice amended) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) of the process in the presence of an ~~characterized in that aqueous solution salt solutions of a salt of a metal and/or ammonium cation~~ eations with a mineral acid ~~acids are used to immobilize the nucleic acids.~~
47. (amended) The process according to Claim 46, wherein the aqueous salt solution is selected from the group of aqueous solutions consisting ~~are~~ of alkaline halides, alkaline-earth halides, alkaline sulfates, alkaline-earth sulfates, alkaline phosphates, alkaline-earth phosphates, or mixtures thereof.
48. (twice amended) The process according to Claim 46, wherein the aqueous salt solution is selected from the group of aqueous solutions consisting of sodium halides, lithium halides, potassium halides, magnesium sulfate, and combinations thereof.

49. **(twice amended)** The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) of the process in the presence of an ~~characterized in that~~ aqueous solution of a salt ~~solutions of salts of a~~ mono or polybasic or polyfunctional organic acid ~~acids~~ with an alkaline or alkaline-earth metal ~~metals are used to immobilize the nucleic acids.~~

50. **(amended)** The process according to Claim 49, wherein the ~~characterized in that~~ aqueous solution of a salt of a mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal is a solution ~~solutions of~~ sodium, potassium or magnesium salts with organic dicarboxylic acids ~~are used to immobilize the nucleic acids.~~

51. **(amended)** The process according to Claim 50, wherein ~~characterized in that~~ the organic dicarboxylic acid is oxalic acid, malonic acid and/or succinic acid.

52. **(amended)** The process according to Claim 49, wherein the ~~characterized in that~~ aqueous solution of salt of mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal is a solution ~~solutions of~~ sodium or potassium salts with a hydroxy or polyhydroxycarboxylic acid ~~are used to immobilize the nucleic acids.~~

53. **(amended)** The process according to Claim 52, wherein ~~characterized in that~~ the polyhydroxycarboxylic acid is citric acid.

54. **(twice amended)** The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of a ~~characterized in that~~ hydroxy-functional compound selected from hydroxyl derivatives of compounds of ~~aliphatic or acyclic saturated or unsaturated hydrocarbons are for the immobilization of the nucleic acids.~~

55. **(amended)** The process according to Claim 54, wherein said hydroxyl derivatives of aliphatic or acyclic saturated or unsaturated hydrocarbons ~~hydroxy-functional compounds~~ are selected from the C₁-C₅ alkanols.

56. (original) The process according to Claim 55, wherein said alkanols are selected from methanol, ethanol, n-propanol, tert.-butanol, pentanols, and mixtures thereof.

Claim 57 (Cancelled)

58. (twice amended) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of a hydroxy compound selected from ~~characterized in that~~ a phenol or polyphenol ~~is used for the immobilization of the nucleic acids.~~

59. (twice amended) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of at least one chaotropic agent ~~is used for the immobilization of the nucleic acids.~~

60. (original) The process according to Claim 59, characterized in that the chaotropic agent is a salt selected from the group of trichloroacetates, thiocyanates, perchlorates, iodides, guanidinium hydrochloride, guanidinium isothiocyanate, and urea.

61. (amended) The process according to Claim 59, wherein the chaotropic agent is present at a concentration of ~~characterized in that~~ 0.01 molar to 10 molar in an aqueous solution ~~solutions of~~ the ~~at least one~~ chaotropic agent ~~by itself, or in combination with other salts, is used to~~ immobilize the nucleic acids.

62. (amended) The process according to Claim 61, wherein the chaotropic agent is present at a concentration of ~~characterized in that~~ 0.1 molar to 7 molar in an aqueous solution ~~solutions of~~ the ~~at least one~~ chaotropic agent ~~by itself, or in combination with other salts, is used to~~ immobilize the nucleic acids.

63. (amended) The process according to Claim 62, wherein the chaotropic agent is present at a concentration of ~~characterized in that~~ 0.2 molar to 5 molar in an aqueous solution ~~solutions of~~ the

~~at least one chaotropic agent by itself, or in combination with other salts, is used to immobilize the nucleic acids.~~

64. (previously amended) The process according to Claim 61, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

65. (previously amended) The process according to Claim 38, wherein washing steps are carried out using salt or buffer solutions selected from aqueous salt solutions of metal and/or ammonium cations with mineral acids, including alkaline halides, alkaline-earth halides, alkaline sulfates, alkaline-earth sulfates, alkaline phosphates, alkaline-earth phosphates, or mixtures thereof; aqueous solutions of salts of mono or polybasic or polyfunctional organic acids with alkaline or alkaline-earth metals, including sodium, potassium or magnesium salts of organic dicarboxylic acids including oxalic acid, malonic acid and succinic acid; aqueous solutions of sodium or potassium salts of a hydroxy or polyhydroxycarboxylic acid including citric acid; hydroxy-functional compounds of aliphatic or acyclic saturated or unsaturated hydrocarbons including C₁-C₅ alkanols and alditols; phenols or polyphenols; one or more chaotropic agents including salts selected from the group of trichloroacetates, thiocyanates, perchlorates, iodides, guanidinium hydrochloride, guanidinium isothiocyanate, and urea.

66. (previously amended) The process according to Claim 9, characterized in that the non-siliceous surface is a membrane.

67. (original) The process according to Claim 66, characterized in that the membrane is a hydrophobic membrane.

68. (original) The process according to Claim 67, characterized in that the hydrophobic membrane consists of a polymer with polar groups.

69. (previously amended) The process according to Claim 67, characterized in that the membrane is a hydrophilic membrane with a hydrophobic surface.

70. (previously amended) The process according to Claim 67, characterized in that the membrane is made of nylon, a polysulfone, polyethersulfone, polycarbonate, polypropylene, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, poly-tetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate, cellulose acetate, nitrocellulose, polybenzimidazole, polyimide, polyacrylnitrile, polyacrylnitrile-copolymer, cellulose-mix ester, cellulose nitrate, or polyphenylene sulfide.

71. (original) The process according to Claim 70, characterized in that the membrane consists of hydrophobic nylon.

72. (original) The process according to Claim 71, characterized in that the membrane is coated with a hydrophobizing coating agent selected from the group of paraffins, waxes, metal soaps, optionally containing additives selected from the group of aluminum or zirconium salts, quaternary organic compounds, ureic derivates, lipid modified resins, silicones, zinc organic compounds and glutaric dialdehyde.

73. (previously amended) The process according to Claim 66, wherein the membrane is a hydrophilic membrane or a membrane made hydrophilic by pre-treatment.

74. (original) The process according to Claim 73 characterized in that the membrane consists of hydrophilisized nylon, polyethersulfone, polycarbonate, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, poly-tetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate, cellulose acetate, polypropylene, nitrocellulose, polybenzimidazole, polyimide, polyacrylnitrile, polyacrylnitrile-copolymer, cellulose-mix ester, polyester, polysulfone, cellulose nitrate, or polyphenylene sulfide.

75. (previously amended) The process according to Claim 66, characterized in that the membrane has a pore diameter of 0.001 to 50 micrometer.

Claims 76-111 (Cancelled)

112. **(twice amended)** The process according to Claim 9 wherein the nucleic acids are reversibly immobilized in step (b) on a non-siliceous surface, wherein said non-siliceous surface comprises a material selected from the group consisting of cellulose acetate; non-carboxylized, hydrophobic polyvinylidene fluoride; and massive, hydrophobic polytetrafluoroethylene.

113. **(amended)** The process ~~method~~ of Claim 112, wherein said material is used in the form of a membrane.

114. **(amended)** The process ~~method~~ of Claim 112, wherein said material is used in the form of a granulate.

115. **(amended)** The process ~~method~~ of Claim 112, wherein the material is used in the form of a fiber.

116. **(amended)** The process ~~method~~ of Claim 115, wherein a plurality of the fibers are organized as a fleece.

Claims 117-120 (Cancelled)

121. (previously added) The process according to Claim 62, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

122. (previously added) The process according to Claim 63, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

123. (previously added) The process according to Claim 68, characterized in that the membrane is a hydrophilic membrane with a hydrophobic surface.

124. (previously added) The process according to Claim 68, characterized in that the membrane is made of nylon, a polysulfone, polyethersulfone, polycarbonate, polypropylene, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, polytetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate, cellulose acetate, nitrocellulose, polybenzimidazole, polyimide, polyacrylnitrile, polyacrylnitrile-copolymer, cellulose-mix ester, cellulose nitrate, or polyphenylene sulfide.

125. (previously added) The process according to Claim 9 for the isolation of nucleic acids from a sample further comprising, prior to step (a), the step of adjusting said at least one nucleic acid sample to binding conditions that permit reversible immobilization to a non-siliceous surface, and wherein there is a pretreatment of said at least one nucleic acid sample before and/or after adjusting the binding conditions of said at least one nucleic acid sample.

126. (previously added) The process according to Claim 125, wherein said pretreatment is selected from the group consisting of salting out, filtration, centrifugation, enzymatic treatment, temperature adjustment, precipitation of non-nucleic acid material, extraction, homogenization, mechanical reduction, binding of contaminants to surfaces, and combinations thereof.

127. (previously added) The process according to Claim 125, wherein said binding conditions permit reversible immobilization of RNA.

128. (previously added) The process according to Claim 125, wherein said binding conditions permit reversible immobilization of DNA.

129. (previously added) The process according to Claim 9, wherein said non-siliceous surface is a material in the form selected from the group consisting of a membrane, a granulate, and a fiber.